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PERMAN & GREEN 425 POST ROAD FAIRFIELD, CT 06824			JUNTIMA, NITTAYA	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/030,286	Applicant(s) KORPELA ET AL.	
	Examiner NITTAYA JUNTIMA	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 16-21 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-21 is/are allowed.
- 6) ☒ Claim(s) 1,6-14, 16 and 17 is/are rejected.
- 7) ☒ Claim(s) 2-5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 July 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the amendment filed on 1/7/2008.
2. Claims 1-14 and 16-21 are pending.
3. Claims 18-21 are allowed.
4. Claims 1, 6-8, and 11-13 remain rejected under 35 U.S.C. 102(e).
5. Claims 9-10, 14, and 16-17 remain rejected under 35 U.S.C. 103(a).
6. Claims 2-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 6-8, and 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Alamouti et al. (“Alamouti”) (USPN 6,185,258 B1).

Regarding claim 1, Alamouti teaches a method for transmitting a certain sequence of symbols (a certain sequence of s_i, s_j which is $s_0, s_1, s_3, s_4, s_5, \dots$), said method comprising:

Constructing a frame of a certain number of consecutive symbols (a certain number of consecutive s_i, s_j symbols are $s_0, s_1, s_3, s_4, s_5, \dots$) (because a number of consecutive symbols, $s_0, s_1, s_3, s_4, s_5, \dots$, shown in Table 1 must be transmitted over a period of time as the sequence of signals in Table 1 cannot go on indefinitely, col. 4, lines 14-24, therefore, a frame of a certain number of consecutive symbols must be constructed).

Transmitting the symbols belonging to the sequence using at least two antennas (antenna 11 and antenna 12 in Fig. 1 are used to transmit symbols $s_0, s_1, s_3, s_4, s_5, \dots$, col. 4, lines 14-24).

Wherein the transmission of each symbol of the sequence of symbols is with a certain transmission pattern (Table 1) that indicates through which transmission antenna each transmitted symbol is transmitted (Table 1 indicates which antenna transmits which symbol).

Starting the transmission of the sequence of symbols from a predefined antenna (antenna 11). See col. 3, lines 62-col. 4, lines 24, and claim 6.

Enabling a receiver (20, Fig. 1) to associate a correct transmission antenna specific channel coefficient (h_0 or h_1) with each transmitted symbol by starting the transmission pattern from the beginning in the beginning of each frame (as shown in eq. (3), h_0 and h_1 are associated with the received signal $r(t)$ comprising the signals s_i and s_j transmitted from associated antenna 11 and antenna 12 at the beginning of a frame, i.e., time slot "t", as shown in a pattern of Table 1, col. 3, lines 41-col. 4, lines 2-50).

Regarding claims 6, 7, and 8, Alamouti teaches that each frame (because a number of consecutive symbols shown in table 1 must be transmitted over a period of time as the sequence of signals cannot go on indefinitely, col. 4, lines 14-24, therefore, a frame of a certain number of

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consecutive symbols must be constructed) comprises of a certain number of consecutive time slots (time periods in Table 1) and each time slot consists of a certain number of consecutive symbols, and said method further comprises transmitting “one/at least one/at least in one of the time slots at least one” symbol belonging to the sequence of symbol in each time slot (see table 1, col. 3, lines 62-col. 4, line 24, and claim 6).

Regarding claim 11, Alamouti teaches that the sequence of symbols is transmitted in downlink direction in a cellular network (see Fig. 1 and col. 3, lines 62-col. 4, line 24).

Claim 12 is an apparatus (transmitter 10 in Fig. 1) claim corresponding to method claim 1, and is rejected under the same reason set forth in the rejection of claim 1 with the addition of an indicator (an indicator must be included in order to indicate antenna 11 to transmit the first symbol belonging to the sequence, col. 3, lines 60-col. 4, lines 24), a starter (a starter must be included in order for the transmitter to start the transmission pattern from the beginning in the beginning of a frame, col. 3, lines 60-col. 4, lines 24).

Claim 13 is network element (transmitter 10 in Fig. 1) claim with two antennas (antenna 11 and antenna 12), corresponding to method claim 1, and is rejected under the same reason set forth in the rejection of claim 1 with the addition of a controller (a controller must be included in order to control the transmitter 10 to transmit a sequence of symbols s_i, s_j to a transmission pattern shown in Table 1, col. 3, lines 60-col. 4, lines 24), an indicator (an indicator must be included in order to indicate antenna 11 to transmit the first symbol belonging to the sequence, col. 3, lines

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60-col. 4, lines 24), and a starter (a starter must be included in order for the transmitter to start the transmission pattern from the beginning in the beginning of a frame, col. 3, lines 60-col. 4, lines 24).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all \ obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alamouti et al. ("Alamouti") (USPN 6,185,258 B1).

Regarding claim 9, Alamouti does not teach that the length of the transmission pattern is larger than the length of the frame. However, it would have been an obvious matter of design choice to modify the length of the transmission pattern of Alamouti such that the length of the transmission pattern would be a longer than the length of the frame (i.e. a period of time), since such a modification would have involved a mere change in the length of a component which involves only routine skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955). In addition, such modification would have been to enable the system to support any length of the transmission pattern as long as part of the pattern is transmitted within the length of a given frame without producing any unexpected results.

Claim 17 is a computer program product claim having functions corresponding to method claim 1 with an exception that Alamouti does not explicitly teach a computer usable medium having computer readable codes embodied therein for causing a computer to activate functions of a device (Transmitter 10 in Fig. 1, col. 3, lines 60-col. 4, lines 24). However, it would have been obvious to one skilled in the art at the time of the invention to include a computer usable medium having computer readable codes embodied therein for causing a computer to activate functions of a device, such as transmitter 10, into the computer program product as recited in the claim such that the computer readable codes can be portable and conveniently installed on other transmitters.

11. Claims 10, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alamouti et al. ("Alamouti") (USPN 6,185,258 B1) in view of an admitted prior art (the specification).

Regarding claim 10, Alamouti teaches that the transmission of the sequence of symbols is started from the primary antenna (antenna 11), see table 1 and col. 3, lines 62-col. 4, lines 24.

However, Alamouti does not teach that the primary antenna transmits a common pilot signal.

An admitted prior art teaches that when transmission diversity and two antennas (TX1 and TX2 in Fig. 3) are in use, antenna TX1 transmits a common pilot signal (CPICH 201, page 4, lines 19-21).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the teaching of Alamouti such that the primary antenna transmits a common pilot signal would be included as recited in the claim. The suggestion/motivation to do so would have been to enable one of the antennas to transmit the common pilot channel similarly as when no transmission diversity is employed as taught by the admitted prior art (page 4, lines 20-21).

Regarding claims 14 and 16, Alamouti teaches that the network element (transmitter 10 in Fig. 1 of Alamouti) is a radio network controller/a base station (a base station, col. 1 lines 56-62 and col. 3, lines 26-37 and 66-64). However, Alamouti does not teach a radio network controller/a base station of a spread spectrum system.

The admitted prior art teaches a radio network controller (a base station) of a spread spectrum system (WCDMA, page 1, lines 17-20, page 3, lines 4-8, and page 4, lines 19-21).

Given the teaching of the admitted prior art, it would have been obvious to one skilled in the art at the time the invention was made to include that the radio network controller is of a spread spectrum system as recited in the claim. The suggestion/motivation to do so would have been to enable the base station in the WCDMA network to provide transmission diversity using multiple antennas as taught by the admitted prior art (page 1, lines 18-20 and page 4, lines 19-21).

Response to Arguments

12. Applicant's arguments filed 1/7/2008 have been fully considered but they are not persuasive.

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A. In the remarks regarding claim 1 on page 10 of the Amendment, applicant argues that Alamouti does teach the limitation "constructing a frame of a certain number of consecutive symbols" because the sequence (s_0, s_1) is not a frame and these symbols will never occur as consecutive symbols but as simultaneously transmitted symbols from two different antennas.

In response, Alamouti clearly teaches that a sequence of consecutive signals, i.e., $s_0, s_1, s_3, s_4, s_5, \dots$, is transmitted in time slots according to a pattern shown in Table 1 (col. 4, lines 14-24). And because these symbols cannot go on indefinitely, therefore, a frame having a certain period of time and containing a certain number of consecutive symbols $(s_0, s_1, s_3, s_4, s_5, \dots)$ must be constructed. Therefore, claim limitation is met. Note that the claim does not further define the structure of the frame or limit that the consecutive symbols must be consecutively transmitted to exclude the teaching of Alamouti. Thus, the argument about whether the symbols occur as consecutive symbols in actual transmission is irrelevant.

B. In the remarks regarding claim 1 on pages 10-11 of the Amendment, applicant argues that Alamouti does not teach the limitation of the transmission of each symbol of the sequence with a certain transmission pattern that indicates through which transmission antenna each transmitted symbol is transmitted because the transmission pattern of Alamouti does not define transmission of consecutive symbols in consecutive symbol periods.

In response, the argument regarding transmission of consecutive symbol periods is not claimed, so it is irrelevant. However, what is claimed is that each symbol of the sequence $s_0, s_1, s_3, s_4, s_5, \dots$ is transmitted with a certain pattern (Table 1) that indicates through which antenna (which of antennas 11 and 12) each symbol is transmitted (col. 4, lines 14-24). And this is

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clearly taught by Alamouti. Table 1 shows the transmission pattern that indicates which antenna transmits which symbol as follows:

symbols s_0 and s_1 are transmitted by antennas 11 and 12, respectively in time slot t ;

symbols s_2 and s_3 are transmitted by antennas 11 and 12, respectively in time slot $t + 2T$;

and

symbols s_4 and s_5 are transmitted by antennas 11 and 12, respectively in time slot $t + 4T$.

C. In the remarks regarding claim 1 on pages 10-11 of the Amendment, applicant argues that Alamouti does teach the limitation “starting the transmission of the sequence of symbols from a predefined antenna” because the transmission simultaneously started from two antennas.

In response, note that the claim requires “a predefined antenna” to start the transmission of the sequence of symbols and does not exclude a situation where more than one predefined antenna is used. In Alamouti, in first time slot t , symbols s_0 and s_1 are transmitted from antenna 11 and 12, respectively (col. 4, lines 14-24). Therefore, it is submitted that antenna 11 of Alamouti reads on “a predefined antenna.” Again, claim limitation is clearly met.

D. In the remarks regarding claim 1 on pages 11-12 of the Amendment, application argues that Alamouti fails to teach (i) starting the transmission pattern from the beginning at the beginning of *each* frame and (ii) enabling a receiver to associate a correct transmission antenna specific channel coefficient with each transmitted symbol because Alamouti only teaches deriving antenna specific channel coefficients from transmitted symbols.

In response, regarding (i), as shown in Table 1 of Alamouti that the transmission pattern actually starts from the beginning in which s_0 and s_1 are transmitted by antennas 11 and 12, respectively, in time slot "t" which is the beginning of a frame (a period of time in which the definite sequence of symbols $s_0, s_1, s_3, s_4, s_5, \dots$ is transmitted). Since the claim does not further define "each frame" to differentiate it from the one frame of Alamouti, "each frame" of the claim then clearly reads on a frame in Table 1 of Alamouti.

Regarding (ii), as shown in eq. (3), Alamouti teaches that h_0 and h_1 are associated with the received signal $r(t)$ comprising the signals s_i and s_j transmitted from associated antenna 11 and antenna 12 at time slot "t" which is the beginning of a frame (col. 3, lines 41-col. 4, lines 2-50). And as admitted by the applicant that Alamouti teaches deriving antenna specific channel coefficients from transmitted symbols, which means that a receiver must associate a correct transmission antenna specific channel coefficient (h_0 and h_1) with each transmitted symbol (s_i and s_j) as a result of the derivation. Thus, claim limitation is taught.

E. With the explanations given in section A-D above, it is respectfully submit that Alamouti teaches all the limitations of claim 1. Therefore, the rejection is maintained.

F. In the remarks regarding claim 9 stated on page 12 of the Amendment, the applicant argues that it is not obvious to modify Alamouti to have the claimed features because the present invention is for the problem of determining the correct channel coefficient, while Alamouti is for the different problem of transmission errors, MPEP 2143.01.

In response, Examiner respectfully disagrees. Nowhere in MPEP 2143.01 states that it would not be obvious to modify the prior art to arrive at the claimed features because the prior art is for different problem than the invention.

In contrast, MPEP 2143.01 states that it would have been obvious to modify the prior art as long as (i) there is some suggestion or motivation to modify the prior art, (ii) if there is prior conflict, suggestive power of each reference must be weighted, (iii) the results of combination/modification would have been predictable to one of ordinary skill in the art, (iv) there must be some objective reason to combine the teachings of the references to establish prima facie obviousness, (v) the proposed modification cannot render the prior art unsatisfactory for its intended purpose, and (vi) the proposed modification cannot change the principle of operation of a reference.

Accordingly, in claim 9, Alamouti fails to teach that the length of the transmission pattern would be a longer than the length of the frame. However, it would have been an obvious matter of design choice to modify the length of the transmission pattern of Alamouti such that the length of the transmission pattern would be a longer than the length of the frame (i.e. a period of time), since such a modification would have involved a mere change in the length of a component which involves only routine skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955). See MPEP 2144.04. In addition, the motivation to do so would have been to enable the system to support any length of the transmission pattern as long as part of the pattern is transmitted within the length of a given frame without producing any unexpected results.

As a result, since motivation is provided, there is no conflict of prior art, the result is predictable, no teaching away from the prior art's intended purpose, and no change in the

principle of operation of a reference, the modification of Alamouti to arrive at the claim invention would have been obvious as it clearly meets the conditions (i) - (vi) of MPEP 2143.01. Therefore, the establishment of obviousness is proper and the rejection is maintained.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NITTAYA JUNTIMA whose telephone number is (571) 272-3120. The examiner can normally be reached on Monday through Friday, 8:00 A.M - 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on 571-272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nittaya Juntima/
3/17/2008

/Frank Duong/
Primary Examiner, Art Unit 2616